

REMARKS

Applicants appreciate the thorough examination of the present application that is reflected in the Official Action of November 18, 2004. In response, independent Claim 1 has been amended by incorporating therein the recitations of dependent Claims 2 and 8, and by emphasizing that a conformal insulating coating comprising aluminum oxide is provided. Independent Claim 15 has been amended to highlight that the aluminum oxide coating is a conformal aluminum oxide coating. The dependent claims have been amended to provide proper antecedent basis. Support for these claim amendments may be found throughout the figures. Applicants respectfully submit that the pending claims are patentable for the reasons that now will be described.

Independent Claims 1 and 15 Are Patentable Over Takekuma In View of Chin and Chen

As was noted above, independent Claim 1 has been amended by incorporating therein the recitations of dependent Claims 2 and 8. Accordingly, all the original rejections under 35 USC §102(e) and the original rejections of Claims 6-7 and 10 under 35 USC §103(a) have become moot.

Claim 8 and independent Claim 15 were rejected under 35 USC §103(a) over U.S. Publication No. 2003/0067264 A1 to Takekuma in view of U.S. Patent No. 6,639,356 to Chin and U.S. Patent No. 6,531,328 to Chen. In this regard, the Official Action has conceded, at the bottom of Page 5, that "...Takekuma does not disclose the metal block is aluminum and wherein the insulating coating comprises aluminum oxide,...". In an attempt to supply the missing teaching, the Official Action cited Chin at the top of Page 6, as follows:

However, Chin discloses the LED package in fig. 1 comprises the aluminum metal block 1, column 2 line 16, and wherein the insulating coating 2 comprises aluminum oxide, column 2 line 21, and a lens retainer 23 on the solid metal block that is configured to hold the lens across the cavity, fig. 1.

However, Applicants respectfully submit that this citation appears to misinterpret the clear teachings of Chin. In particular, Chin describes at Figure 1 an LED package that includes an electrically conductive base 1 that is able to be made from brass,

aluminum or the like. A second heat dissipating element 2 is provided that is made of electrical insulation material and is added with heat dissipating reinforcement elements, such as aluminum oxide. The Examiner is referred to Chin Column 2, lines 15-23 that were cited in the Official Action:

The base 1 is electrically conductive so that the base 1 is able to be made from brass, aluminum or the like. The base 1 has a receiving recess 11 defined in a top of the base 1 for receiving therein the lighting chip 3 and at least one step 12 formed on a peripheral edge thereof.

The heat dissipating element 2 is made of electrical insulation material and is added with heat dissipating reinforcement element, such as Al_2O_3 .

In sharp contrast, Claim 1 as amended recites:

a conformal insulating coating comprising aluminum oxide on a surface of the solid aluminum block.

Applicants respectfully submit that Chin's separate heat dissipating element 2 cannot reasonably be regarded as an insulating coating on the surface of Chin's base 1. Moreover, even if somehow regarded as a coating, heat dissipating element 2 is certainly not a conformal coating, as clearly illustrated in Figure 1 of Chin. Nor would it be obvious to modify Chin's heat dissipating element 2 into the claimed conformal insulating coating because Chin's heat dissipating element 2 includes at least two supports 21, 22 therein, an extension 23, and surfaces that mate to the step 12 in the base 1. In fact, Chin teaches away from the use of a conformal coating comprising Al_2O_3 , by stating at Column 2, lines 35-39:

The bottom of the heat dissipating element 2 is so configured and sized to fit with the step 12 so that when the base 1 is connected to the heat dissipating element 2, the heat dissipating element 2 is able to mate with the base 1.

Thus, connection of base 1 to the heat dissipating element 2 takes away from a conformal coating. Accordingly, even assuming for the sake of argument that it would be obvious to combine selective features of the three distinct references Takekuma, Chin and Chen, the combination would not describe or suggest the recitations of Claim 1.

Remaining independent Claim 15 recites:

a solid aluminum block including a cavity in a face thereof
and a conformal aluminum oxide coating on a surface thereof
including on the cavity...,

and is, therefore, patentable for at least the reasons that were described above. This analysis will not be repeated for the sake of brevity. The dependent claims are patentable at least per the patentability of the independent claims from which they depend.

Moreover, Applicants respectfully submit that many of the dependent claims are separately patentable. For example, Claim 9 recites:

9. A mounting substrate according to Claim 1 wherein the face is a first face and wherein the solid aluminum block includes therein first and second through holes that extend from the first face to a second face of the solid aluminum block that is opposite the first face, the respective first and second through holes including the conformal insulating coating thereon that comprises aluminum oxide and a respective first and second conductive via therein that extends from the first face to the second face and wherein a respective one of the spaced apart conductive traces is electrically connected to a respective one of the conductive vias.

Assuming for the sake of argument that Chen describes through holes as alleged at Page 4 of the Official Action, Chen's through holes are provided in an insulating silicon substrate 8, so that it would not be obvious to provide a conformal insulating coating on the through holes and vias on the insulating coating, as recited in Claim 9. Accordingly, Claim 9 is independently patentable for at least these additional reasons. Claim 18 includes the same recitations and is independently patentable for at least the same reasons.

Applicants Request Signed Copies of Information Disclosure Statements (IDS)

The Official Action included a signed copy of the Form PTO-1449A that accompanied Applicants' Second Supplemental IDS of October 29, 2004. However, the Forms PTO-1449 that accompanied Applicants' IDS of November 11, 2003 and the Supplemental IDS of February 24, 2004 have not been returned. Attached, for the convenience of the Examiner, is a copy of the IDS and Supplemental IDS, and the stamped postcards indicating receipt by the U.S. Patent and Trademark Office. Duplicate copies of the foreign patent documents and non-patent literature documents are also attached for the convenience of the Examiner. Applicants respectfully

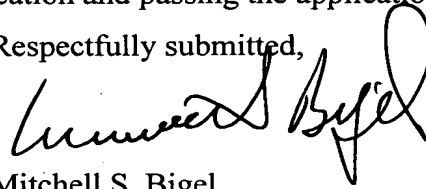
In re: Gerald H. Negley et al.
Application Serial No.: 10/659,108
Filed: September 9, 2003
Page 10 of 10

request the Examiner to return a signed copy of these Forms PTO-1449, initialed by the Examiner to indicate that the references were considered.

Conclusion

Applicants again appreciate the thorough examination and the citation of Takekuma, Chin and Chen. Applicants have now shown that the amended claims are patentable over this combination of references. Accordingly, Applicants respectfully request allowance of the present application and passing the application to issue.

Respectfully submitted,



Mitchell S. Bigel
Registration No. 29,614
Attorney for Applicants

Customer Number 20792

Myers Bigel Sibley & Sajovec, P.A.
P.O. Box 37428
Raleigh, NC 27627
919-854-1400
919-854-1401 (Fax)

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on January 13, 2005.



Susan E. Freedman

Date of Signature: January 13, 2005